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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 10464 (1983): Data sheet for selection of wagon puller/pusher [MED 7: Material Handling Systems and Equipment]

“ज्ञान से एक नये भारत का निर्माण”

Satyanaaranay Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”





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*Indian Standard*

DATA SHEET FOR  
SELECTION OF WAGON PULLER/PUSHER

1. **Scope** — Lays down the data required for the selection of wagon pullers/pushers.

**2. Data Sheet**

**2.1 Application and Site Data**

- a) Applicable to. Proposal.....Purchase.....As built.....Date.....
- b) Service.....Continuous/Intermittent; Days per year.....Days
- c) Duty; Operating hours per shift.....h; Shifts per day.....
- d) Type.....
- e) Manufacturer.....
- f) Site condition.....
  - 1) Surroundings/Environmental Condition.....
  - 2) Relative humidity (Max) at.....°C.....%
  - 3) Temperature; Maximum.....°C; Minimum.....°C; Design.....°C
  - 4) Rainfall; Average.....mm; Maximum.....mm
  - 5) Wind velocity.....kmph
  - 6) Siesmic coefficient.....Zone.....
  - 7) Area classification; .....Hazardous/Non-Hazardous
- g) Available power supply; Volts.....; Phase.....; Frequency.....

**2.2 Wagon Data**

- a) Type.....
- b) Weight; Gross.....t; Tare.....t
- c) Total gross weight of wagons to be handled.....t
- d) Maximum distance of last wagon.....m
- e) Maximum number of wagons in a rake .....

**2.3 Track Data**

- a) Level.....; Incline.....; Degree of curvature.....
- b) Gauge .....
- c) Size.....
- d) Gradient; Inhaul side.....; Out haul side.....
- e) Number and position of track switch points (enclose sketch).....

## 2.4 Technical Specification

## 2.4.1 General Data

- a) Number of wagons pulled.....
- b) Related tractive effort..... kg
- c) Maximum permissible capacity (Max tractive effort)..... kg
- d) Continuous/Beetle speed..... m/min
- e) Range of working.....
- f) Hitch rope length.....
- g) Pay in rope.....
- h) Enclosure: ..... Totally enclosed/Partially enclosed/Not enclosed

## 2.4.2 Drive Data

	Inhaul		Outhaul	
	Continuous Wire Rope Type	Beetle Charger Type	Continuous Wire Rope Type	Beetle Charger Type
a) Electric Motor				
Make	.....	.....	.....	.....
Type	.....	.....	.....	.....
Power	..... kW	..... kW	..... kW	..... kW
Speed	..... rpm	..... rpm	..... rpm	..... rpm
Class of insulation	.....	.....	.....	.....
b) Coupling				
Type	.....	.....	.....	.....
Make	.....	.....	.....	.....
Size	.....	.....	.....	.....
c) Primary/Secondary Reduction				
Type	.....	.....	.....	.....
Ratio	.....	.....	.....	.....
Make	.....	.....	.....	.....
Size	.....	.....	.....	.....
Lubrication	.....	.....	.....	.....
Mass	..... kg	..... kg	..... kg	..... kg
According to which specification	.....	.....	.....	.....

	Inhaul				Outhaul			
	Continuous Wire Rope Type		Beetle Charger Type		Continuous Wire Rope Type		Beetle Charger Type	
d) Reduction Gear Box:								
Type	.....	.....	.....	.....	.....	.....	.....	.....
Size	.....	.....	.....	.....	.....	.....	.....	.....
Make	.....	.....	.....	.....	.....	.....	.....	.....
Reduction ratio	.....	.....	.....	.....	.....	.....	.....	.....
Service factor	.....	.....	.....	.....	.....	.....	.....	.....
Efficiency	.....	.....	.....	.....	.....	.....	.....	.....
Gears:	Pinion	Spur	Pinion	Spur	Pinion	Spur	Pinion	Spur
Tooth type	.....	.....	.....	.....	.....	.....	.....	.....
Pressure	.....	.....	.....	.....	.....	.....	.....	.....
Angle	.....	.....	.....	.....	.....	.....	.....	.....
Module	.....	.....	.....	.....	.....	.....	.....	.....
No. of teeth	.....	.....	.....	.....	.....	.....	.....	.....
Width	.....	.....	.....	.....	.....	.....	.....	.....
Hardness	.....	.....	.....	.....	.....	.....	.....	.....
e) Brakes								
Type	.....	.....	.....	.....	.....	.....	.....	.....
Make	.....	.....	.....	.....	.....	.....	.....	.....
Braking torque Max	.....	.....	.....	.....	.....	.....	.....	.....
Drum diameter	.....	.....	.....	.....	.....	.....	.....	.....

#### 2.4.3 Wire Ropes

	Inhaul		Outhaul	
	Continuous Wire Rope Type	Beetle Charger Type	Continuous Wire Rope Type	Beetle Charger Type
a) Size	..... mm	..... mm	..... mm	..... mm
b) Construction	.....	.....	.....	.....
c) Ultimate breaking strength	.....	.....	.....	.....
d) Factor of safety	.....	.....	.....	.....

## 2.4.4 Drums and Sheaves

	Inhaul		Outhaul	
	Continuous Wire Rope Type	Beetle Charger Type	Continuous Wire Rope Type	Beetle Charger Type
a) Type	.....	.....	.....	.....
b) Size	..... mm	..... mm	..... mm	..... mm
c) Construction	.....	.....	.....	.....
d) Bearings	.....	.....	.....	.....
e) Face width	.....	.....	.....	.....
f) Rope drum diameter	..... mm	..... mm	..... mm	..... mm
g) Construction of rope drum	.....	.....	.....	.....

## 2.4.5 Specific Data

## 2.4.5.1 General

a) Type..... Continuous wire rope type/Beetle trolley type  
 b) Rated pushing pulling capacity..... t  
 c) Axle load..... t  
 d) No. of wagons to be pushed at a time.....  
 e) Maximum permissible capacity..... t  
 f) Speed of travel..... m/s  
 g) Inchng speed..... m/s  
 h) Reversing speed..... m/s  
 i) Range of travel..... m/s  
 k) Current collector; Type..... Feed voltage..... Type of insulation

## 2.4.5.2 Continuous wire rope puller..... Reversible/Non Reversible

a) Drum: Numbers.....; Size.....  
 b) Bearing: Type.....; Make and Size.....  
 c) Hold back:..... Required/Not required  
 1) Type.....  
 2) Capacity and size.....  
 d) Take up.....  
 1) Type.....  
 2) Weight..... kg  
 3) Movement (travel).....  
 e) Over travel limit switch  
 1) Type.....  
 2) Size.....  
 3) Particulars .....

f) Overall size.....  
 g) Weight, complete..... kg  
 h) Foundation bolts; Numbers and sizes.....  
 i) Manufacturer drawing number.....

**2.4.5.3 Beetle trolley type**

	Inhaul	Outhaul
a) Reversible/Non-reversible	.....	.....
b) Track:		
1) Gauge	..... mm	..... mm
2) Size	..... kg/m	..... kg/m
3) Length	..... mm	..... mm
c) Trolley:		
1) Type	.....	.....
2) Speed		
i) Forward	..... m/s	..... m/s
ii) Return	..... m/s	..... m/s
3) Total travel (stroke)	..... mm	..... mm
4) Height of roller or highest element from rail level during:		
i) Hauling position	..... mm	..... mm
ii) Retracting position	..... mm	..... mm
d) Pushing rollers:		
1) Numbers	.....	.....
2) Diameter	..... mm	..... mm
3) Bearings	.....	.....
4) Lubrication	.....	.....
5) Hardness	.....	.....
e) Winch drums:		
1) Numbers	.....	.....
2) Size	.....	.....
f) Rollers pushing mechanism data:		
1) Pinion	.....	.....
2) Section gear	.....	.....
3) Locking	.....	.....

	Inhaul	Outhaul
g) <i>Bearings:</i>		
1) Type	.....	.....
2) Make	.....	.....
3) Size	.....	.....
h) <i>Overall size</i>		
1) Beetle	.....	.....
2) Mass	..... kg	..... kg
3) Winch haul drive	.....	.....
4) Mass of complete drive unit	..... kg	..... kg
j) <i>Track limit switch</i>		
1) Type	.....	.....
2) Size	.....	.....
k) <i>Limit switch for drive</i>		
1) Type	.....	.....
2) Chain	.....	.....
i) Type	.....	.....
ii) Size	.....	.....
iii) Make	.....	.....
3) Chain Sprocket		
i) Number of teeth	.....	.....
ii) Pitch	.....	.....
iii) Hardness	.....	.....
m) <i>Take-up</i>		
1) Type	.....	.....
2) Travel	.....	.....
n) <i>Foundation bolts</i>		
1) Number	.....	.....
2) Size	.....	.....
p) <i>Manufacturer's drawing No.</i>	.....	.....

**2.5 Materials of Construction**

- a) Beetle trolley:     1) Frame: Inhaul side.....; Outhaul side.....  
 2) Rollers: .....  
 3) Drawbar.....  
 4) Arms.....
- b) Drum: Continuous wire rope type.....  
 Beetle charger type.....
- c) Gears:  
 1) Wagon pusher.....  
 2) Continuous wire rope type.....  
 3) Beetle charger type.....
- d) Wire rope:  
 1) Continuous wire rope type.....  
 2) Beetle charger type.....
- e) Thimble .....
- f) Sheaves .....
- g) Hook/Pushing rollers.....
- h) Basket.....
- j) Wedge.....

**2.6 Scope of Supply:**.....

.....  
 .....  
 .....

**2.7 Exclusions:**.....

.....  
 .....

**2.8 Remarks:**.....

.....  
 .....

**EXPLANATORY NOTE**

Raw materials like coal, ore, lime stone, etc, are supplied to steel plant, thermal power station and other similar industries through open railway wagons. The contents of the railway wagons are emptied at industrial units through the use of wagon tipplers. For optimum utilization of wagon tipplers, wagons are placed and removed from wagon tipplers with the use of marshalling equipment. Marshalling equipment viz. Beetle trolley type/Continuous wire rope type are used for inhauling/outhauling of the wagons on unloading/loading tracks as also for correct placement/spotting of wagons at the desired position.

The wagon marshalling equipment used in conjunction with wagon tipplers operates either in between the railway tracks or by the side of the tracks. With a view to minimize the damage to either the railway equipment or the marshalling equipment, it is desired that the marshalling equipment is designed and placed in a manner that it does not interfere with the normal operation of railway wagons or other equipment on the railway track. The Research Design & Standards Organization (Ministry of Railways), Lucknow, therefore, desires that all the wagons marshalling equipment when passing below or alongside the wagon shall be out of the limiting gauge profile of the wagon given in Fig. 1.

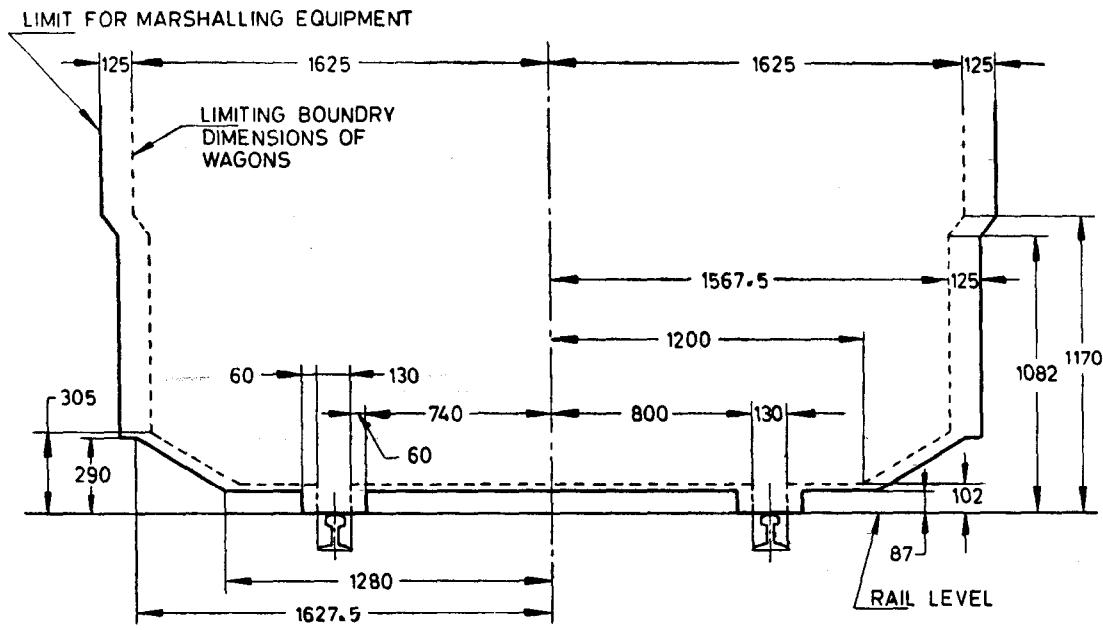


FIG. 1 LIMITING DIMENSIONS

This standard lays down the data required for selection of wagon puller/pusher (wagon marshalling equipment). This data sheet may be utilized by manufacturers and purchasers alike to enable them to select the equipment according to their requirements.

AMENDMENT NO. 1 SEPTEMBER 1986

TO

IS : 10464-1983 DATA SHEET FOR SELECTION  
OF WAGON PULLER/PUSHER

( *Page 8, Fig. 1* ) — Substitute the following for the existing figure:

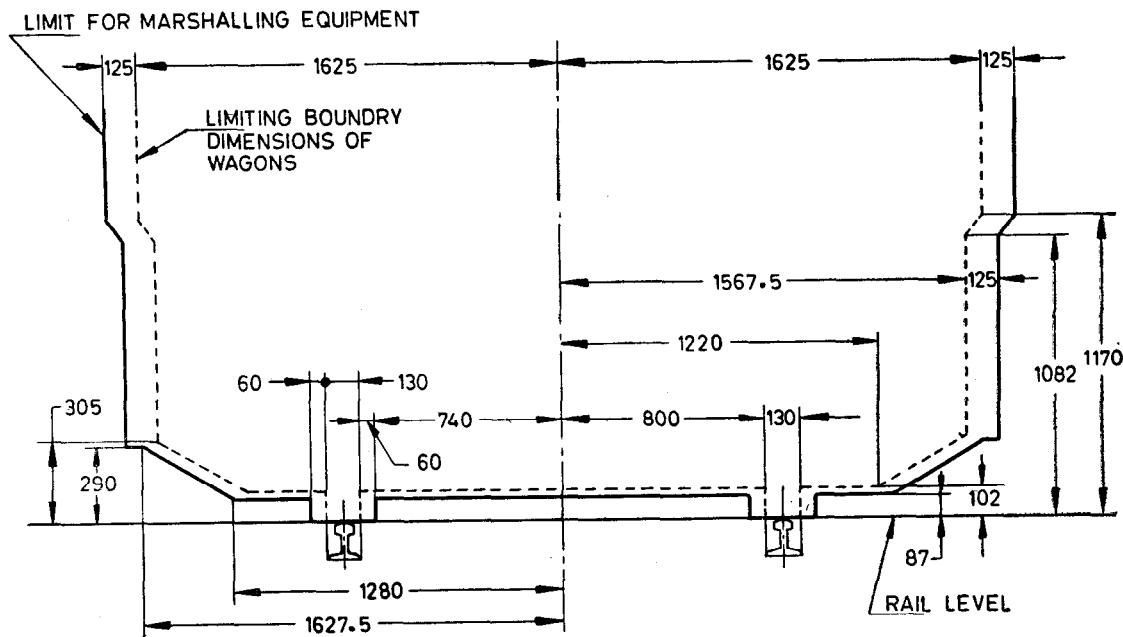


FIG. 5 LIMITING DIMENSIONS